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STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



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DIRECTOR

TO: Water Well Drilling Contractors
Pump Installers
Local Health Departments
Attention: Environmental Health Directors
Field Sanitarians

FROM: Michael S. Gaber, Chief
Well Construction Unit
Drinking Water and Environmental Health Section

DATE: November 27, 2007

SUBJECT: Grouting of Telescoped Permanent Casing

This memorandum addresses the requirements for grouting when telescoped casing pipe is installed in a water well. Rules 133a, 134a, and Rule 135 (R 325.1633a, R 325.1634a, and R 325.1635, respectively) of the Michigan Water Well Construction and Pump Installation Code (Groundwater Quality Control Rules), adopted under Part 127, Water Supply and Sewer Systems, 1978 PA 368, as amended, pertain to well grouting. Grouting is a preventive step that helps ensure the sanitary integrity of the drinking water source, preserve natural artesian pressure, and maintain separation of hydraulically distinct aquifers.

Wells installed by rotary-bored or augered drilling methods shall be grouted the entire length of casing or from a point not more than 10 feet above the top of the well screen up to the ground surface. Rule 133a(1) states that shale traps, cementing baskets, packers, or other devices shall not be used to suspend grout above an open annular space.

Some well drillers install a telescoped casing pipe beneath an upper permanent casing during initial well construction. If the telescoped casing string is suspended by a packer or set of packers, an ungrouted annulus may exist on the outside of the telescoped casing pipe. If the telescoped liner pipe is installed during initial well completion, the telescoped casing must be grouted in the same manner as the upper permanent casing.

Completing a well with an ungrouted annular space on the outside of a permanent casing, between two casing pipe strings, or on the outside of a lower telescoped casing can cause future water quality problems. Bacteria and other organisms that may persist in an annular space can migrate downward through the unsealed channel into the well intake during pumping. Stagnant water between two casing strings can adversely impact drinking water quality. Wells with ungrouted casings can be plagued with chronic turbidity problems and deteriorated water quality.

The definitions of permanent casing and liner pipe in the well code are as follows:

Rule 103(9) "Liner pipe" means a permanent casing installed within another permanent casing or open borehole subsequent to initial construction of the well."

Rule 104 (1) "Permanent casing" means durable, impervious pipe placed or driven into the borehole and left in place to maintain the well opening."

In addition to meeting the grouting requirements, steel pipe used as permanent casing shall have an inside diameter of not less than 2 inches, and plastic pipe shall have an inside diameter of not less than 5 inches. Liner pipe that is PVC plastic must meet the dimensional and structural requirements of Rules 131a and 131b (R 325.1631a and R 325.1631b).

Another potential concern when telescoped casing is installed is whether the well owner received the product that the owner paid for. If the well owner expected, and was given an estimate based on, a 5-inch diameter, 200 foot deep well, and received 50 feet of 5-inch casing and the remaining telescoped lower casing was a smaller diameter, violation of the Michigan Consumer Protection Act and the purchase contract may have occurred. Well owners should be told, up front, whenever telescoped casing well design is anticipated. Further, there is concern that the routine installation of telescoped casing on new wells is being used by some contractors as a means of circumventing grouting regulations.

It is commonly recognized that occasionally it is necessary to case off additional borehole after initial construction of a well and grouting of the permanent casing. If a liner must be installed to seal off contaminants with public health implications (coliform bacteria, nitrates, arsenic volatile organic contaminants, etc.) grouting around the liner is necessary to provide a more positive seal. If borehole/liner dimensions do not allow conventional grouting methods to be used, the driller should consult with the local health department sanitarian to find the best solution.

Local health departments (LHDs) reviewing well logs showing ungrouted telescoped casing should ask the water well driller when and why the telescoped section was installed. If the telescoped section was installed during the initial construction and was ungrouted, a well code violation has occurred. Appropriate correction of the well deficiency is expected.

If you have any questions, please contact me by phone at 517-241-1374, or by e-mail at gaberm@michigan.gov.

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cc: DEQ District Offices